

A new North African subspecies of Common Chaffinch *Fringilla coelebs*

by Lars Svensson

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SUMMARY. — A new subspecies of Common Chaffinch *Fringilla coelebs* in North Africa is described. It is restricted to northern Cyrenaica in north-east Libya. Differences from the other North African subspecies, *F. c. africana* and *F. c. spodiogenys*, are discussed, the main ones being that males invariably possess a prominent white patch on the central nape, a hint of a white post-ocular supercilium, a more yellowish tinge both above and below, stronger yellow fringes to the tertials and wing-coverts, and a less clean blue-grey head. Reasons for not recognising the subspecies *F. c. koenigi* are reconfirmed. There is some variation in size and in saturation of male plumage within the range of *africana*, making separation of *koenigi* untenable.

Common Chaffinch *Fringilla coelebs* is an abundant and widely distributed polytypic species. Geographical variation is manifest in the large number of described subspecies which, based on their external characteristics, are often conveniently arranged in three subspecies groups: (i) a continental Eurasian group, (ii) a North African group and (iii) a north-east Atlantic Islands group. These groups differ sufficiently to have been suggested to possibly constitute two or even three species (C. S. Roselaar *in* Cramp & Perrins 1994). However, because genetic analyses demonstrate that *spodiogenys* of Tunisia is sister taxon to all other examined Chaffinch populations, and that *africana* of Morocco and Algeria is closer to European *coelebs* than to *spodiogenys* (Marshall & Baker 1999), it appears better to maintain all three subspecies groups as one species, to avoid creating potentially non-monophyletic species.

Within the North African group two subspecies are generally recognised, *africana* (Morocco east to west Tunisia, and—as generally maintained—again in north-east Libya), and *spodiogenys* (east Tunisia, north-west Libya). A third subspecies, *koenigi* (north-west Morocco) has been described, but is generally considered to be a synonym of *africana*. It is within this North African group that a new subspecies is proposed.

Material

Specimens of all Chaffinches collected in North Africa as breeders, or estimated from their appearance to belong to the various African subspecies, were examined in the following collections: Natural History Museum, Tring (NHM), American Museum of Natural History, New York (AMNH), Museum für Naturkunde, Berlin (ZMB) and Naturhistoriska Riksmuseet, Stockholm (NRM). A few specimens were also provided on loan from Istituto Superiore per la Protezione e la Ricerca Ambientale, Bologna (ISPRA). The total number of specimens examined of each taxon is presented in Table 1.

Results and Discussion

Subspecies *F. c. spodiogenys* was described in 1841 by Bonaparte from near Tunis and south to Sfax in Tunisia, i.e. the east of the country. The local population breeding in north-

TABLE 1
Numbers of individuals of North African Chaffinch *Fringilla coelebs* taxa examined for this study, taxa arranged from west to east.

	♂	♀	Totals
<i>F. c. africana</i>	128	23	151
<i>F. c. spodiogenys</i>	51	18	69
<i>F. c. harterti</i> ssp. nov.	18	8	26
Totals	197	49	246

west Tripolitania, Libya, is usually also referred to this subspecies (Isenmann *et al.* 2005). This race is large and quite pale pink below, has a green mantle and back (corresponding in Ridgway 1912 to either Asphodel Green or Pois Green, both on Pl. 41) and comparatively pale lead-grey crown, nape, shoulders, cheeks and neck-sides (Light Alice Blue, Pl. 34). About 25% of males have a very small white patch on the back of the neck, and another 25% an even fainter hint of such a patch, more or less concealed under pale lead-grey feathers and only visible if these feathers are disordered. There is a narrow white eye-ring (divided at fore and rear), but no white patch or streak behind the eye except a hint in some. The double wingbars and tertial edges are generally pure white (when fresh sometimes faintly tinged yellow). There is much white in the outertail.

Subspecies *F. c. africana* was described by Levaillant. The year of publication is customarily stated to be 1850, but some uncertainty exists regarding the date (Dickinson & Christidis 2014). Its range covers the major part of north-west Africa from Morocco to west Tunisia. If sufficient material is examined, it is evident that this subspecies varies individually and geographically to some extent, a fact that must be borne in mind when assessing subspecies taxonomy. Birds in the north-west tend to be smaller and darker than those in the south, which are larger and paler. Although typical birds are rather saturated cold vinaceous-pink below, a few are paler and tend towards *spodiogenys*.

Breeders around Tangier in extreme north-west Morocco are very subtly smaller and darker than average *africana*, and have been named *koenigi* (Rothschild & Hartert 1893). However, the size difference is small, with large overlap with breeders in south Morocco or north Algeria, and most specimens from around Tangier do not differ in colour or darkness from breeders elsewhere in northern Africa, thus *koenigi* is best considered synonymous with *africana*, an arrangement adopted by Meinertzhagen (1940: 132), Vaurie (1956, 1959), Paynter (1968), C. S. Roselaar *in* Cramp & Perrins (1996), Thévenot *et al.* (2003), Dickinson (2003) and Dickinson & Christidis (2014). This also accords with the so-called 75% rule, wherein at least three-quarters of all individuals of at least one sex must differ diagnosably from adjacent subspecies (e.g. Amadon 1949), which rule is applied to subspecies distinction in the forthcoming *Handbook of Western Palearctic birds* (Shirihai & Svensson *in press*).

A series collected in autumn in the southern Algerian Atlas Mountains (Djelfa) by C. B. Ticehurst and H. Whistler in 1937 (in NHM) tend to be large, large-billed and paler below than typical *africana* from the Algier region, and it is tempting to view these as a potential separate subspecies. Yet, when a large sample from the Algerian Saharan Atlas was assessed, especially those in AMNH and NRM with birds from Biskra, Batna and Lambèse, all kinds of intermediates and transitional plumages appear to bridge the appearance of the Djelfa series with more typical *africana*. There is a tendency for breeders in the Saharan Atlas to be slightly larger and paler than northern birds, but the difference is far from distinct with much overlap.

In summary, breeders in Morocco, Algeria and western Tunisia, *africana*, are in more than 75% of examined specimens slightly darker and smaller than *spodiogenys* in east Tunisia, have a darker blue-grey crown and nape and, on average, more extensive black on the lores and forehead, with the pink of underparts usually darker. However, due to clinal and rather extensive individual variation in size and colours within *africana* it seems best not to recognise further subspecies within this region.

The local and isolated population in north-east Libya (Cyrenaica) was included within *spodiogenys* by Hartert (1923), but since then has usually been treated within *africana* (e.g. by Paynter 1968, who stated that the Libyan population is 'indistinguishable' from *africana*, and by Collar *et al.* 2010, but see below). Fry & Keith (2004) considered that it was unresolved as to which subspecies the Cyrenaican breeders are best referred to.

During preparatory work for a forthcoming handbook (Shirihai & Svensson in press), I was struck by the distinctiveness of the Cyrenaican population. Inclusion of these breeders in *africana* would be odd irrespective of morphology, as they would represent an isolated population, with a different and paler subspecies (*spodiogenys*) between them and the rest of the range of *africana*, c.1,200 km away. Morphological differences from *africana*, as will be demonstrated, are on the same level as those separating *africana* from *spodiogenys*, leading me to name the Libyan population:

Fringilla coelebs harterti, subsp. nov.

Holotype.—Adult male, AMNH 709744, collected by E. Hartert and C. Hilgert, near Al Marj ('Merg') c.85 km north-east of Benghazi and c.18 km from the coast, in north-east Libya, on 8 May 1922. Sex and age are indicated on the label and also evident from plumage colours, shape of tail feathers and wear. Measurements: wing length (max.) 95 mm, tail 77 mm, tarsus 19.6 mm, bill to skull 17.0 mm, bill depth at feathers 9.0 mm. Upperparts and head as in *spodiogenys* but has a more distinct white nuchal patch, a small white post-ocular patch (appearing as a rear extension of the upper 'eyelid' in the broken white eye-ring), further the lead-grey crown and nape are slightly darker and less pure, the mantle is not pure green but has a brownish or bronzy tinge, the lead-grey shoulders are less extensive, and the tertial and inner greater covert fringes are partly tinged pale lemon-yellow. Underparts are paler than in *africana* but not as pale as in typical *spodiogenys*, and differ from both by having a faint yellowish-buff tinge to the pink. Bill long, 1.3 mm longer than the mean for *africana* and 1.4 mm longer than that for *spodiogenys* (Table 2; Figs. 1–3).

Label.—On one side in print: 'W. Rothschild, E. Hartert & C. Hilgert, Coll.', although 'W. Rothschild' has been crossed out with ink. In ink also 'FRINGILLA coelebs spodiogenys!' and stamped 'AM. MUS. NAT. HIST. NO.' and in ink '709744'. On other side: in print 'Rothschild Museum'. Further 'MERG, Cyrenaica, Date: 8/5/1922. Sex: ♂ ad. Iris: brown Bill: pale blue, tip black Feet: dark greyish brown.'

Distribution.—Restricted to north Cyrenaica wherever there is suitable habitat, i.e. woods, orchards or gardens, from sea level to c.500 m on Gebel Akhdar, with specimens from Al Marj (Merg), Wadi el Kuf, Barqah (Barce), Tükrah (Tocra), Maraua, Cyrene and Messa. Apparently not in Tripolitania (north-west Libya), and does not occur east of Darnah (Derna) (Stanford 1954).

Diagnosis.—Differs from similarly sized *spodiogenys* of east Tunisia in that male plumage is darker above and below, being as dark as the smaller *africana* but warmer above than the majority of *africana*, less cold blue and green, with the green mantle more tinged golden-brown, especially when fresh ('Deep Grape Green', Pl. 41, or 'Dull Citrine', Pl. 16 in Ridgway 1912). Extension of bluish or lead-grey on shoulders somewhat narrower than in



Figure 1. Dorsal view of males of three subspecies of Common Chaffinch *Fringilla coelebs*, three of each. From left, *F. c. africana*, *F. c. spodiogenys* and *F. c. harterti* ssp. nov. Note in *harterti* the obvious white nuchal patch, less pure lead-grey crown and nape, slight brown tinge to mantle, and more limited grey on the scapulars. Note also overall paleness of *F. c. spodiogenys*. The third specimen from the right is the holotype of *harterti*. Of the slightly more variable *F. c. africana*, the three examples are all from spring (late March–late May) and represent, from left to right, the palest birds, from Batna, Algeria, an average dark bird, from western Morocco, and a small, dark bird from Tangier ('*koenigi*') (Lars Svensson / © American Museum of Natural History, New York)



Figure 2. Same specimens as in Fig. 1, ventral view. From left *F. c. africana*, *F. c. spodiogenys* and *F. c. harterti* ssp. nov. Note in *F. c. harterti* intermediate darkness of pink, the pink having a slightly warmer shade than in the other two. Again, note overall paleness of *F. c. spodiogenys* (Lars Svensson / © American Museum of Natural History, New York)

TABLE 2
Biometrics of North African Chaffinch *Fringilla coelebs* taxa, listed from west to east. Measurements (mm) taken by the author, following standard protocols established in Svensson (1992). *n* = sample; **bold** numbers refer to mean values; ± = standard deviation; W = wing length from carpal, maximum stretched and flattened; T = tail length; bill measured to skull (s); T/W = ratio between tail and wing lengths expressed as a percentage; BD (f) = bill depth at feathering; total length taken only from well-prepared specimens.

♂♂		<i>n</i>	T	T/W	Tarsus	Bill (s)	BD (f)	Total length
<i>F. c. africana</i>	128	81–97	60–78.5	72.1–83.5	18.0–20.5	13.5–16.6	7.4–9.7	139–185
		89.8	70.4	78.3	19.3	15.1	8.4	157.6
		± 3.33	± 3.66	± 2.28	± 0.52	± 0.71	± 0.41	± 8.42
<i>F. c. spodiogenys</i>	51	86–97	66–79	72.1–83.2	17.5–19.9	13.6–16.4	7.7–9.5	150–177
		91.1	71.4	78.3	18.9	15.0	8.4	163.9
		± 2.60	± 3.11	± 2.18	± 0.57	± 0.77	± 0.37	± 5.95
<i>F. c. harterti</i> ssp. nov.	18	89–95	67–79	75.3–85.6	18.0–21.6	14.3–18.0	8.5–9.7	155–170
		91.6	73.6	80.4	19.5	16.4	9.1	163.1
		± 1.87	± 2.95	± 2.35	± 0.87	± 0.84	± 0.38	± 4.40
♀♀								
<i>F. c. africana</i>	23	80–88	61.5–68.5	74.1–80.5	17.5–20.0	14.0–15.9	7.3–8.9	138–155
		84.2	65.4	77.7	18.9	15.2	8.2	146.6
		± 1.95	± 1.87	± 1.65	± 0.60	± 0.46	± 0.47	± 5.30
<i>F. c. spodiogenys</i>	18	81–93	63–72.5	73.1–84.1	17.2–19.8	14.0–16.4	7.5–8.9	147–172
		85.3	66.6	78.1	18.7	15.0	8.2	156.2
		± 2.98	± 2.50	± 2.89	± 0.74	± 0.62	± 0.32	± 6.96
<i>F. c. harterti</i> ssp. nov.	8	84–87	67–68	77.0–81.0	17.8–20.3	14.3–17.4	8.2–9.6	145–158
		85.3	67.8	79.5	18.9	15.7	9.0	154.0
		± 1.04	± 0.46	± 2.35	± 0.83	± 0.88	± 0.45	± 4.34

both other subspecies. Underparts of males pale pink, clearly paler than *africana* but subtly darker than in *spodiogenys*, and differing from both in that the pink has a faint yellowish-buff tinge. Further differs by having a heavier bill than both, by invariably having a small but generally distinct white nuchal patch (present in 19% of *africana* and 57% of *spodiogenys*, but generally fainter and smaller). A small narrow white patch behind eye is present in nearly all males. Also, the pale innermost greater covert and tertial fringes tend to be purer pale lemon-yellow (whiter in both other taxa), often even visible in more bleached spring plumage. Compared to male *africana*, lores and cheeks tend to be less neatly blue-grey, more sullied brown-grey. More long-legged especially compared to *spodiogenys*.

Females of all Chaffinch subspecies are more similar and less easy to separate than males, but female *harteri* differs from others in North Africa in being subtly more yellowish or ochre-tinged both above and below. Like males, the tips and fringes of the greater coverts and tertials tend to show more pale yellow than in the other races (Fig. 4).

Etymology.—The new name refers to the fact that in 1922 Ernst Hartert, together with C. Hilgert, made a significant effort to investigate the avifauna of northern Cyrenaica, where they collected the holotype. It also honours one of the founders of modern avian taxonomy.

Previous observations.—I am not the first to have noted the distinctiveness of the Chaffinches in north Cyrenaica. J. K. Stanford visited northern Cyrenaica in March–May 1952 with the objectives of studying spring migration and collecting birds for NHM. He collected eight males and five female Chaffinches and noted (1954): ‘One of the commonest birds of the Gebel el Akhdar, occurring from sea level near the Tükrah pass eastwards to



Figure 3. Same specimens as in Fig. 1, lateral view. From left *F. c. africana*, *F. c. spodiogenys* and *F. c. harterti* ssp. nov. Note in *F. c. harterti* slightly less pure blue-grey head and tendency to show more lemon-yellow on tertial fringes (Lars Svensson / © American Museum of Natural History, New York)



Figure 4. Females of three subspecies of Common Chaffinch, lateral view. From left two *F. c. africana*, two *F. c. harterti* ssp. nov. and one *F. c. spodiogenys*. Note in *F. c. harterti* slightly more lemon-yellow on tertial fringes, especially on the right-hand specimen, and a tendency to be warmer and buffier in general (Lars Svensson / © American Museum of Natural History, New York)

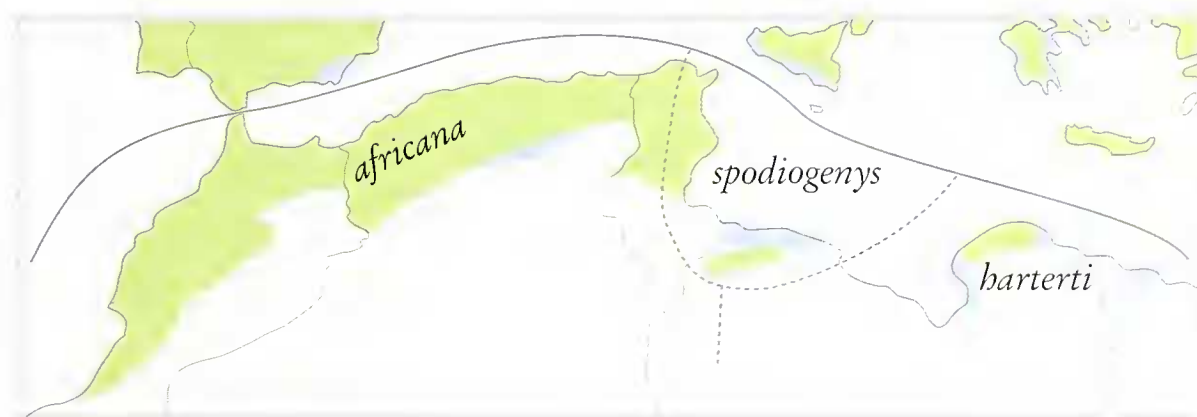


Figure 5. Breeding ranges of North African taxa of Common Chaffinch *Fringilla coelebs*. Map based on the literature cited and examination of specimens, and prepared by Magnus Ullman.

Darnah, where it is scarce. I have seen none further east. In the centre of the Gebel it is very common in woodland, gardens and scrub. [...] The song is shorter and rather weaker' [than of the British race] 'without the terminal flourish.' He concluded with a comparison between the series of breeders in Cyrenaica with *africana* and *spodiogenys*: 'This series differs from both in the size and shape of the bill, which is noticeably longer and more pointed. [...] In richness of colour the Cyrenaican series is closer to *africana* and differs from it only in that the females have rather greener mantles and there is a tendency for both sexes to have a yellow suffusion on the underparts and in the white of the wings...'. 'All the males have white bases to the grey feathers of the back of the head which show through as an occasional white fleck. This seems an individual character in North African Chaffinches but more common in the east than in the west.' Despite these acute observations, Stanford was content to include his series in the geographically distant *africana*.

At NHM, a former curator of the Bird Room, Derek Goodwin, made numerous notes left in trays and on the inside of cabinet doors regarding the morphology of certain subspecies or geographical populations. According to the current collections manager, R. Prŷs-Jones (*in litt.* 2014), these notes were made in the early 1970s when the collection was moved from central London to Tring. Concerning the series of Chaffinches from Cyrenaica, Goodwin had noted: '*Fringilla coelebs*, nr *spodiogenys*. Cyrenaica. Our Cyrenaican specimens seem nearest *spodiogenys* although averaging a little darker, & they have slightly larger bills.'

Finally, C. S. Roselaar (*in* Cramp & Perrins 1994) was tempted to treat the Cyrenaican birds as a separate race: 'Birds from Cyrenaica ... have longer bill than those from remainder of North Africa, colour near to *africana*, but underparts tinged yellow-buff instead of white, and white nape-patch large (Stanford 1954); here included in *africana*, following Vaurie 1959, but perhaps separable.'

In summary, the north Cyrenaican breeders of Chaffinch are as morphologically distinct from *spodiogenys* and *africana*, respectively, as these latter two are from each other, justifying recognition of *harterti*.

Conclusion

The following subspecies of Chaffinch in North Africa should be recognised, listed chronologically (see Fig. 5):

Fringilla coelebs spodiogenys Bonaparte, 1841. Type locality: Tunisia near Tunis and Sfax.

Fringilla coelebs africana Levaillant, 1850. Type locality: Algeria.

Fringilla coelebs harterti Svensson 2015. Type locality: near Al Marj, north Cyrenaica.

Given that *africana* is more closely related to *coelebs* than to *spodiogenys* (see above), it would be interesting to know the position of *harterti* within a revised genetic tree.

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Address: S:tå Toras väg 28, 269 77 Torekov, Sweden, e-mail: lars@lullula.se